WisDOT RD&T Home

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Putting Research to Work

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Technical information for state DOT highway professionals
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Research World

WisDOT Archaeological Find Recognized by AASHTO

In a recent Success Story, AASHTO praises an archaeological find in the WIS 57 expansion route in Door County. Digging in this area began in 2003 and led to discoveries of arrowheads, grindstones, human remains and more dating back 12,000 years. Read the article on AASHTO's site at http://transportation.org/aashto/success.nsf/allpages/2005-01wisconsin. For more details about this and other recent WisDOT archaeological news, see the *WisDOT Connector* at http://www.dot.wisconsin.gov/library/publications/format/newsletters/connector/fall2004.pdf.

India Launches New Crash Analysis Laboratory

India's first mobile road collision investigation and research laboratory has been launched in Delhi. The CrashLab is a Toyota Qualis jeep equipped with state-of-the-art camera equipment, distance/speed measurement devices, a breath alcohol analyzer, GPS and assorted gauges and tools for accident scene investigation. Read the report from the FIA Foundation at http://www.fiafoundation.com/policy/road_safety/news/foundation_backs_indias_first_mobile_crash_lab.html.

Stress of Winter Weather Affects Driver Safety

A new study by UK researchers suggests that depression and lethargy experienced over the short, dark days of winter may lower drivers' reaction time and increase their irritability, and trigger as many accidents as road rage does. Read more at http://www.manchesteronline.co.uk/news/s/143/143188_drivers_under_the_weather.html.

UK Association Promotes Best Practices

Established in 1930, the United Kingdom's Institution of Highways and Transportation is a professional society promoting best practices and technical excellence in the design, construction, maintenance and operation of sustainable transport systems and infrastructure. IHT has grown to 10,500 members, with 18 branches in the UK and overseas branches in Hong Kong and Malaysia. Visit the IHT Web site for current project information at http://www.iht.org/.

Site Offers Survey of UK Highway Research

For a quick look at what transportation research occupies the UK's Highways Agency, take a look at its Research Compendium pages. A research in progress list includes abstracts and status information on projects devoted to bridge corrosion, bonding asphalt pavement layers, managing congestion, and more. Search the site at http://www.ha-research.co.uk/pages.php?id=1.

To receive notice of **Putting Research to Work** each month, e-mail wisdotresearch@dot.state.wi.us.
Previous issues are available at http://www.dot.wisconsin.gov/library/publications/format/newsletters/rdt.htm.

Other e-newsletters for transportation professionals:
TRB E-Newsletter from the Transportation Research Board: http://gulliver.trb.org/news/.
The AASHTO Journal from the American Association of State Highway and Transportation Officials: http://www.transportation.org/publications/journal.nsf.
CTS Research E-News from the University of Minnesota: http://www.cts.umn.edu/publications/enews/.
Texas Transportation Researcher from TAMU's Texas Transportation Institute: http://tti.tamu.edu/researcher/.
Austroads Newsletter from Austroads: http://www.austroads.com.au/austroads_newsletter.html.
Transportation Communications Newsletter: http://groups.yahoo.com/group/transport-communications/.

Designing for the Future

Delaware Designs Around Scour Problem

For 20 years, Delaware DOT has worked to manage scour issues for bridge supports in the Indian River Inlet. In the fall, DelDOT begins construction on a new bridge that will avoid scour problems altogether—a 1,000-foot cable-stayed concrete arch design, with piers on land at either end. See the American Society of Highway Engineers' Scanner newsletter at http://www.highwayengineers.org/scanner010505g.html.

Sustainable Highways Through Early Planning

From speed-detection systems to fruit-stand parking, the improvements to New Mexico's US 70 project demonstrate a unique blend of safety and sustainability. To achieve this goal, an integrated team of engineers, planners and environmental specialists worked hand in hand throughout the project. Read more in Parsons Brinckerhoff's *PB Network* at http://www.pbworld.com/news_events/publications/network/issue_59/59_12_baca_case_study_outcomes.asp.

Designers Leave Room for Nonmotorized Devices

Make way for skateboards, scooters and Segways. Nonmotorized devices are hitting the roadways, and designers are learning how to make room to keep their users and motorists safe. Read FHWA's "Characteristics of Emerging Road and Trail Users and Their Safety" to learn more about how much space these gadgets need and how they work at http://www.tfhrc.gov/safety/pubs/04104/roadstechbrief.pdf.

Surveyors Lay Foundation for Record-Setting Runway Bridge

Precision surveying has shaped up to be a key component of the construction of a monumental airport runway bridge in Georgia. Set to be the longest runway bridge in the world, the structure will span up to 18 lanes of Interstate 285. Surveyors were challenged with the need for high levels of precision and a schedule that demanded around-the-clock weekend work with no lane closures. Surveyors' tools for the job have included robotic total stations with automatic target recognition, and lasers compatible with GPS 3D control. Read more in *Point of Beginning* magazine at http://www.pobonline.com/CDA/ArticleInformation/Article/0,9169,140652,00.html.

Successful Mitigation Plan Saves Time, Money and Wildlife

A Regional Environmental Mitigation Program in Sarasota County, Florida is using large sites purchased by the county to consolidate habitat mitigation in a few parcels, allowing plants and wildlife to inhabit larger areas and providing more cost-effective management of lands impacted by highway construction. Read more in the *Venice Gondolier* at http://www.venicegondolier.com/NewsArchive3/010805/vn17.htm.

South Dakota Interchange, Pedestrian Bridge Honored

Three Sioux Falls projects won state highway design and construction awards last month, including a highway interchange and pedestrian bridge. The Interstate 29 interchange includes a bridge and retaining wall with context-sensitive design elements. The pedestrian bridge, the only one of its kind in South Dakota, features a helical ramp consisting of two 360-degree runs supported by 10 interior columns. Read the press release at http://www.sddot.com/geninfo_news.asp?mode=detail&ID=467, and read more about the project at http://www.sddot.com/sfprojects/index.asp.

VDOT Meets Challenges on Bridge Megaproject

Virginia's Woodrow Wilson Bridge project is a leader in innovation, from design to construction. Elements include V-shaped concrete piers and a transparent sound wall made of graffiti-resistant acrylic; workers used an air bubble curtain during pile driving to reduce fish fatalities. Read more at http://enr.construction.com/features/transportation/archives/050131-2.asp.

Construction and Materials Innovations

Program Produces Intriguing New Concrete Technology

The latest issue of *Focus* reports on developments from FHWA's five-year-old Concrete Pavement Technology Program. Promising technologies include a small machine that can be dragged over fresh concrete to evaluate placement of dowel bars, and the use of precast concrete pavement in full-depth repairs. See http://www.tfhrc.gov/focus/dec04/04.htm.

Prefab Bridges Save Money, Time in Chicago and Washington State

Transportation agencies continue to have success with prefabricated bridge elements. Washington and Oregon DOTs widened and replaced a bridge over the Columbia River in 124 nights and three weekends, work that otherwise could have taken four years. Meanwhile, the Chicago Transit Authority placed a prefabricated 425-ton, 111-foot long central span over a single weekend. Read more in *Focus* at http://www.tfhrc.gov/focus/dec04/01.htm, and at WSDOT's Web site at http://www.wsdot.wa.gov/projects/lewisclarkbridge/.

Web Site Demonstrates Advances in Asphalt Pavement Noise Reduction

The Asphalt Pavement Alliance recently put all our industry's research into reducing driving noise to public relations use. Its new QuietPavement.com Web site offers history, design information, and even sound bites comparing the decibel levels of blenders, vacuums and barking dogs. Read the APA's press release at http://www.asphaltalliance.com/singlenews.asp?item_ID=424.

Concrete Paving Industry Chimes in on Noise Reduction, Surface Friction

The American Concrete Pavement Association also weighs sound as a factor in its current effort to compile a multistate database of pavement friction information. ACPA research of surface friction, spray, skid values and more found concrete favorable to rubberized asphalt, which loses desirable surface characteristics over time. Read more in *Concrete Monthly* at http://www.concretemonthly.com/monthly/art.php/1187.

Iowa Exploring What Makes Some PCC So Good

The first phase of a study of characteristics of durable, well-performing portland cement concrete pavements in Iowa was recently posted online by Iowa State University's Center for Transportation Research and Education. Researchers found that sufficient data could be collated with site inspections to identify characteristics of good pavement. The next phase calls for field testing of structural characteristics of good and bad PCC pavements. See the final report at http://www.ctre.iastate.edu/reports/pavement_attributes.pdf.

Remote Construction Tare Weight Technology

San Diego-based Hardy Instruments drew attention in *Concrete Monthly* for new remote weight sensing and transmission products. In November, the company introduced new cab-mounted computers that automatically relay weight measurements to fleet managers. Designed for use on cement mixer trucks, it suggests potential for asphalt applications, as well. Read the press release at http://www.hardyinstruments.com/pr/cement.html.

Recycled Plastic for Sound Walls

New Hampshire DOT is testing a new type of sound wall made from recycled plastic in two locations in Manchester. NHDOT expects the walls to yield life-cycle cost savings, since the plastic panels lack the disposal costs associated with pressure-treated wood—when no longer needed, the panels can be recycled into other products. See page 15 of NHDOT's On the Move newsletter at http://webster.state.nh.us/dot/media/newsletters/newsletter-winter2005.pdf.

Operating/Optimizing the System

WisDOT Gears Up for Work Zone Changes

Wisconsin DOT is preparing to make changes to its work zone traffic control devices in an effort to keep workers and drivers safe. The changes will put FHWA's 2003 Manual on Uniform Traffic Control Devices guidelines into effect. Read more in the January issue of *Crossroads*, the newsletter of Wisconsin's Local Technical Assistance Program, at http://tic.engr.wisc.edu/crossroads/xrds_2005_1.pdf.

IDOT Links Crash Records, Health Care Data

Illinois DOT is changing the way it manages traffic crash reports. IDOT and the state's Department of Public Health are linking up to develop a new database that shares traffic crash reports and health care data from various sources. Read about the Crash Outcome Data Evaluation System at http://www.dot.state.il.us/press/r122904.html.

Improving Snowplow Fleet Management

When is it time for a snowplow to hang up its keys? Recent research from the University of Minnesota's Center for Transportation Studies investigated how to improve fleet operating costs through effective vehicle replacement. Read more in *The Sensor* at http://www.its.umn.edu/sensor/2005/winter/snowplows.html.

More Rest Area Presentations Available

Additional PowerPoint presentations from the October Rest Area Conference, put on by AASHTO's Subcommittee on Maintenance, are now available online. Review presentations on accessibility, master plans and wireless access, among other topics discussed during the conference, at http://maintenance.transportation.org/ref_NSRA20041004.html.

VDOT Trims Winter Operations Costs

Two winters of changes to Virginia DOT's winter operations have saved millions of dollars. Reducing the amount of rental equipment, working with skeleton crews, correctly calibrating chemical-dispensing equipment, and other strategies have added up to big savings in snow and ice operations costs for VDOT. Read about the changes in the department's Bulletin http://virginiadot.org/bulletin/2004novdec/Best%20Practices.asp.

Continuity Plans Keep Essential Operations on Track

Even during a natural disaster or other emergency, roads must be cleared, signals must work and traffic signs must be in place. That's why public works agencies nationally are creating Continuity of Operations Plans to ensure the continued performance of the minimum essential operations functions during emergencies. The American Public Works Association's January issue of *Reporter* looks at the steps involved in building a COOP at http://www.apwa.net/Publications/Reporter/ReporterOnline/index.asp?DISPLAY=ISSUE&ISSUE_DATE=012005&ARTICLE_NUMBER=965.

IDOT May Hang Up Emergency Call Boxes

Illinois DOT may cut the cord on the 275 emergency call boxes that line stretches of Illinois interstate near St. Louis. The phones are still used, but more and more calls come in from mobile phones. Read more about the roadside call boxes in the *St. Louis Post-Dispatch* at http://www.stltoday.com/stltoday/news/stories.nsf/stlouiscitycounty/story/489B7AC25E18186C86256F86001B1D22?OpenDocument.

Safe Travel/Smart Travel

Wisconsin Drivers Using Dynamic Message Signs

More than two-thirds of drivers responding to a University of Wisconsin survey reported adjusting their travel routes based on travel time or traffic information provided by DMS. The survey was part of a comprehensive study that will enable WisDOT to effectively address customer expectations for incident management systems. See the ITS Benefits and Costs Database at http://www.benefitcost.its.dot.gov/ITS/benecost.nsf/ByLink/BOTM-January2005, and view the final report at http://www.dot.wisconsin.gov/library/research/docs/finalreports/45-17variablemessagesigns.pdf.

TxDOT's Business-Intelligence Extranet

Texas DOT's new Crash Records Information System will help save lives by making up-to-date, digitized police and highway patrol accident reports readily available to traffic engineers and local law enforcement agencies through a business-intelligence extranet. Read more in *Information Week* at http://www.informationweek.com/story/showArticle.jhtml?articleID=57702656&pgno=1.

Senior Driver Self-Test Aimed at Reducing Unsafe Behavior

AAA Nevada has developed a new at-home test that allows seniors to measure the physical and mental abilities shown to be the strongest predictors of crash risk among older drivers. The tool comes in the form of a CD-ROM that will run on most personal computers. After completing the evaluation, users get advice on making safe decisions about driving. See the article in the *Pahrump Valley Times* at http://www.pahrumpvalleytimes.com/2005/01/19/news/driving.html.

Kentucky Uses LEDs in Traffic Signals

The Kentucky DOT has joined other states that are upgrading vehicular traffic signals to use light emitting diodes rather than filament bulbs. LEDs burn brighter than filament bulbs, increasing visibility for motorists, and are much more cost-efficient. LEDs use about 90% less electricity and are guaranteed to last six years, which is expected to save Kentucky $1.7 million a year. See the article in *The Kentucky Post* at http://www.kypost.com/2005/01/21/lites012105.html.

Getting Travelers More Real-Time Information

Public agencies and private companies have been providing traveler information for more than 20 years, but new ITS infrastructure and emerging technologies promise to broaden the amount and quality of real-time information available. For example, the Vehicle Infrastructure Integration initiative is exploring the concept of using vehicles as data collection probes, communicating with the roadside to exchange data about air temperature, sudden braking and other driving conditions. See the article in *Public Roads* at http://www.tfhrc.gov/pubrds/04nov/06.htm.

Red-Light Cameras: A Mixed Blessing?

Preliminary findings from a Virginia DOT study indicate that enforcement cameras reduce red-light-running by about 21%. However, the findings also indicate that crashes become more frequent at intersections after cameras are installed, driven by an increase in rear-end smash-ups. Read more in *The Virginian-Pilot* at http://home.hamptonroads.com/stories/story.cfm?story=80826&ran=203722.

Study Advances On-Ramp Metering

A California PATH Program study focused on reducing congestion by developing new on-ramp control methods for a stretch of California Interstate. The recently published report shows how the new algorithms for freeway on-ramp metering work, and how they're applicable to other highways with ramp metering. Review the full report at http://www.path.berkeley.edu/PATH/Publications/PDF/PRR/2005/PRR-2005-02.pdf.